

REMARKS

In the Office Action mailed on October 3, 2002, the Examiner rejected claims 1-7 and 9 under 35 USC 102(e) as being anticipated by Nakagawa et al., U.S. Patent No. 6,030,667, and rejected claims 1 and 5-8 under 35 USC 102(e) as being anticipated by Jeng et al., U.S. Patent No. 6,451,161.

Regarding the rejection of claims 1-7 and 9 under 35 USC 102(e), the Applicants respectfully submit that claims 1 and 9 are not anticipated by Nakagawa et al. '667 because claims 1 and 9 include elements that are not disclosed in the cited reference.

Independent claim 1 recites:

- “1. A plasma processing apparatus having a vacuum chamber for generating plenty of inductively coupled plasmas therein, comprising:
 a first very high frequency power source that supplies a very high frequency power having a frequency of 20 to 300MHz; and
 a plurality of antenna units being parallel-connected within each other and receiving the very high frequency power from the first very high frequency power source;
 an antenna being comprised of the plurality of antenna unit;
 wherein the vacuum chamber has a reaction space where the inductively coupled plasmas are generated by the plurality of antenna units.”

Also, independent claim 9 recites:

- “9. An RF power supplying apparatus, comprising:
 a very high frequency power source supplying a very high frequency power having a frequency of 20 to 300MHz;
 an impedance matching box connected to the very high frequency power source;
 a plurality of antenna units connected in parallel with each other; and
 an antenna being comprised of the plurality of antenna units; and
 wherein each antenna unit has at least one variable capacitor and a coil antenna.”

Anticipation requires disclosure of all of the limitations of a claim in a single reference. However, Nakagawa et al. '667 does not disclose a “very high frequency power source” that supplies “a very high frequency power having a frequency of 20 to 300MHz”, as set forth in

claims 1 and 9 of the present application. The frequency range of the power supply disclosed in Nakagawa et al. '667 is 30 to 300 MHz. Thus, a portion (i.e., 20-29 MHz) of the power supply frequency range disclosed in the present application is outside the frequency range set forth in the cited in Nakagawa et al. '667. As a portion of the power supply frequency range recited in claim 1 is not disclosed in the cited reference, the reference does not disclose all of the limitations recited in claims 1 and 9.

In addition, Nakagawa et al. '667 does not disclose "an impedance matching box connected to the very high frequency power source" and "a plurality of antenna units" wherein "each antenna unit has at least one variable capacitor and a coil antenna", as set forth in claim 9. As is clearly seen in FIG. 11, both variable capacitors C1 and C2 are incorporated into impedance matcher 16B. Neither of these variable capacitors is incorporated into any of the antenna units of multiple spiral coil 15A. For this reason, Nakagawa et al. '667 does not disclose all of the limitations recited in claim 9.

Similarly, with regard to the RF power supply, Jeng et al. '161 states only that RF source 28 typically has one of standard frequencies 13.56 MHz, 27.12 MHz or 40.68 MHz. Thus, Jeng et al. '161 does not disclose a "very high frequency power source" that supplies "a very high frequency power having a frequency of 20 to 300MHz", as set forth in claims 1 and 9 of the present application, and the reference does not disclose all of the limitations recited in claims 1 and 9.

In addition, Jeng et al. '161 does not disclose "a plurality of antenna units" wherein "each antenna unit has at least one variable capacitor and a coil antenna", as set forth in claim 9. Jeng et al. '161 does not disclose any antenna units having a variable capacitor and a coil antenna. For this reason, the reference does not disclose all of the limitations recited in claim 9.

In view of the above, the Applicants respectfully submit that neither of the cited references disclose all of the limitations recited in either of claims 1 or 9. Thus, neither claim 1 nor claim 9 is anticipated by the cited references. As claim 1 is believed to be patentable over the cited references, it is submitted that claims 2-8 are also patentable as they depend from claim 1.

In view of the above remarks, the Applicants respectfully submit that all rejections of record have been overcome. The Applicants respectfully request favorable reconsideration and allowance of the present application.

Respectfully submitted,



Timothy J. Keefer

Attorney for Applicants

Reg. No. 35567

Dated: 1/3, 20013

WILDMAN, HARROLD, ALLEN & DIXON
225 West Wacker Drive
Chicago, Illinois 60606-1229
Telephone: (312) 201-2834
Facsimile: (312) 201-2555
e-mail: keefer@wildmanharrold.com